

Meeting Date: February 18, 2004
Date Prepared: February 21, 2004

**MULTI-AGENCY RADIATION SURVEY AND SITE INVESTIGATION MANUAL
(MARSSIM) WORKGROUP MEETING NOTES**

WEDNESDAY, February 18, 2004

ATTENDEES:

U.S. Environmental Protection Agency - OSWER/ERT-West: C. Petullo
U.S. Environmental Protection Agency - Headquarters: K. Klawiter
U.S. Environmental Protection Agency - Headquarters: L. Bender
U.S. Environmental Protection Agency - NAREL: V. Lloyd
U.S. Environmental Protection Agency - Region II: N. Azzam
U.S. Nuclear Regulatory Commission - RES: R. Meck
U.S. Nuclear Regulatory Commission - RES: G. Powers
U.S. Nuclear Regulatory Commission - NMSS: J. DeCicco
U.S. Nuclear Regulatory Commission - NMSS: A. Huffert
U.S. Air Force: R. Bhat
U.S. Air Force: Major D. Caputo
U.S. Navy: S. Doremus
U.S. Department of Energy (DOE/EM): A. Williams
U.S. Department of Homeland Security (formerly DOE/EML): C. Gogolak

MEMBERS OF THE PUBLIC:

Cabrera Services, Inc.: S. Hay (U.S. Air Force Contractor)

DISCUSSION

C. Petullo opened the meeting. The Work Group (WG) reviewed the agenda and made plans for the rest of the meeting. The WG reviewed the action items from the December 2003 meeting. The contractor did not provide copies of the case study examples to the WG for review. C. Gogolak is continuing to work on FAQs and expects to have them completed for review at the March 2004 meeting. N. Azzam has provided NUREG-1717 as a source for information on unregulated sources of radioactivity for Appendix B of the MARSAME, and is continuing to search for references regarding radionuclide concentrations in ceramics.

A. Williams informed the WG that DOE and DHS had issued a guide for classification of documents (e.g., secret, top secret) providing information on nuclear smuggling. MARSAME

may require a classification review if topics relating to illicit trade of radioactive materials or interdiction of imported materials are discussed. The goal of the guidance is to prevent release of information that may be useful for anyone trying to “beat the system.” This should not be an issue for MARSAME, but if a review is required it could delay release of the supplement.

There was a discussion on the status of the MARSSIM WG Charter. DOE has not signed the current version of the charter, stating that additional oversight of the WG is needed. A. Wallo of DOE has suggested that the Interagency Steering Committee On Radiation Standards (ISCORS) be used to provide this oversight. C. Petullo and R. Meck will set up a meeting with A. Wallo to discuss his concerns.

S. Doremus expressed concerns about obtaining a DOD signature for the completed supplement. D. Alberth from the Army was instrumental in obtaining DOD signatures for the MARSSIM, but he may not be available for this task with MARSAME. S. Doremus and D. Caputo were tasked with getting information on DOD involvement and determining people in DOD with the authority to sign the final MARSAME.

R. Meck had graphics artists at NRC prepare several versions of a new logo for MARSSIM that includes DHS. The WG members had identified two potential designs for final consideration. The agency representatives voted to accept the design with a ribbon connecting the five member agency seals as the new MARSSIM Work Group logo. K. Klawiter was tasked with posting the new logo on the web site and providing an announcement that DHS is now a member of the MARSSIM development team.

CHAPTER 1

The WG received a compilation of comments on the Chapter 1 draft dated January 30, 2004. These minutes reflect the major discussions from the comment resolution discussions and do not address every comment.

Citations in MARSAME will be included for direct quotations and major ideas included in the supplement. Citations will include page and line numbers from the original documents when appropriate to assist interested readers in finding referenced materials. All cited references must be publically available (i.e., currently in print or available through the NRC ADAMS system).

The goal is to provide a document that can almost stand on its own. G. Powers recommended that the draft versions of the document include extensive use of footnotes providing the cited information. These footnotes can be removed for the final version, but make the reviews easier to perform. The supplement will be prepared using the NRC format for documents published in the NUREG series.

The WG discussed the definition of release, and debated the use of the term disposition. Release implies that the process results in a lowering of the level of radiological control. Disposition means to put in place, or to arrange. There were concerns that disposition might be too closely linked to disposal for some readers, since another definition of disposition is “the act of disposing.” The SAB stated that MARSAME should avoid recommending disposal as a primary option. The WG decided that disposition was the best term for describing the overall process discussed in MARSAME. Release and interdiction are two subsets of disposition. Clearance is a subset of release. V. Lloyd provided a diagram to visually represent the relationship between disposition, release, and clearance (see Figure 1).

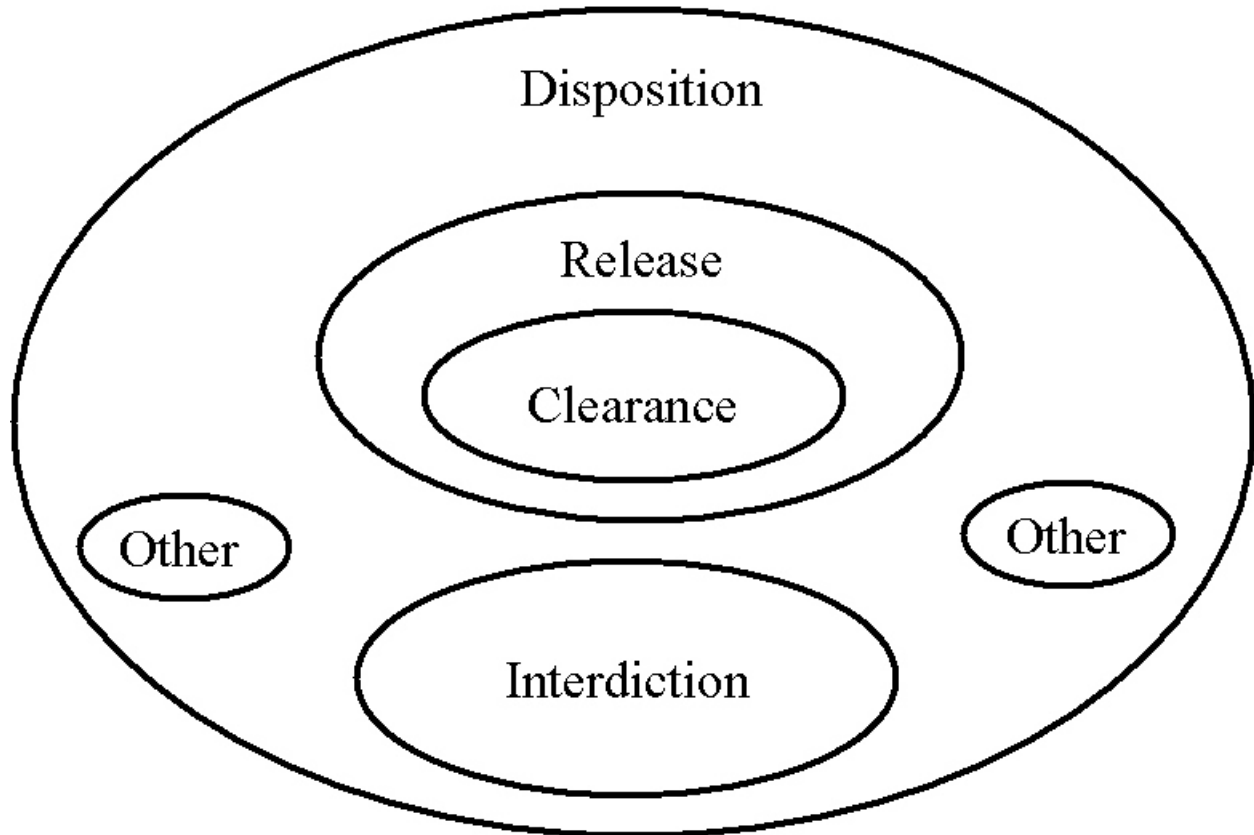


Figure 1

The change from release to disposition impacted the use of other terms. For example, release criterion now implies that it only applies to release, and possibly not to clearance or interdiction. The WG recommended that the more generic term action level be used in place of release criterion. The definition of terms is discussed in Section 1.5.

The WG determined that there are multiple decisions that will be addressed in the MARSAME supplement, and each decision will have a separate Data Life Cycle. For example, the overall decision in MARSAME concerns the final disposition (i.e., release or interdiction) of the materials and equipment (M&E). However, there are two decisions during the IA that will be used to design the disposition survey:

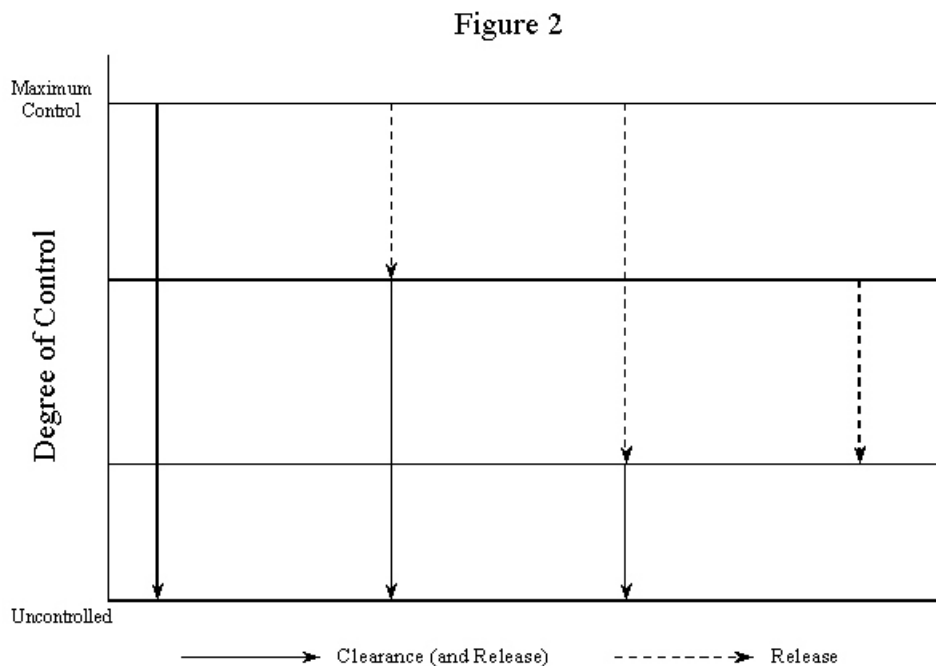
- are the M&E impacted or non-impacted, and
- what are the disposition options that will be evaluated by the disposition survey.

Other decisions, such as classification or survey unit identification, will be addressed later in the supplement.

MARSAME needs to include the idea that, for some M&E, additional information will be needed before a disposition survey can be designed and implemented. Scoping, characterization, and remedial action support surveys may be required to collect this additional information. Each of these surveys will require a separate data life cycle for separate decisions.

LUNCH

D. Caputo prepared a drawing describing the difference between release and clearance that was discussed by the WG (see Figure 2).



The WG continued the discussion about the definitions of interdiction, clearance, and release. It was noted that Figure 2 needs to have horizontal arrows for release to show transfer from one area with a specified level of radiological control to a different area (e.g., another licensee) with the same level of control. The contractor was tasked with providing a definition for interdiction and updating the glossary with revised definitions for release and clearance for the March WG meeting.

The overview in Chapter 1 needs to incorporate the idea that each step in MARSAME has a Data Life Cycle. Section 1.3 needs to state that the breakout of DQOs is for the disposition decision, and that the DQO Process will be applied to several decisions that lead to the disposition decision. One example is the decision to select disposition options based on the IA. The idea is to use the IA to narrow down the number of disposition choices and design a disposition survey. If that survey design is not practical (technically or economically), the planning team can return to the IA and investigate additional disposition options if necessary. The discussion of options for applying the DQO Process and the iterative nature of planning also needs to be documented better in Chapter 1.

Section 1.7 does not present information in a way that is easy to understand and implement for the reader. This section needs to include both Scenario A and Scenario B, and describe that either scenario can be applied to release or interdiction surveys. There are two levels of decisions that need to be addressed during the IA: the selection of disposition options, and the overall disposition decision. In other words, the desired disposition for the materials and equipment needs to be selected to define the problem (Step 2 in the DQO Process) for deciding whether or not the requirements for the selected disposition have been achieved.

There are more options for disposition that need to be considered in MARSAME than there were in MARSSIM. This section needs to indicate the importance of DQO and DQA, as well as discuss the emphasis on scanning in MARSAME. It is not necessary to reiterate each step in the DQO Process in Chapter 1. The concept that SOPs are quality documents that require review and signoff is important in MARSAME (include a reference to EPA QA/G-6).

COMMENT DATABASE

C. Gogolak presented information on the electronic comments database developed by EML. The WG agreed to use the electronic database to submit comments on draft documents during the remaining development of MARSAME. The WG requested that all reviewers be able to view all existing comments on a document to minimize duplicate comments. The contractor will need access to all comments to provide printouts for meetings and to make revisions to the documents. C. Gogolak contacted the programmer at EML and the requested changes were incorporated. Right-clicking on the list of comments will allow the user to download a comma delimited file containing all of the existing comments.

FAQ COMMENT

NRC received a question concerning a figure in one of the FAQs posted on the web site. The figure is an update of Figure D.8 in MARSSIM and the FAQ discusses decision error rates and the definition of the gray region. One of the labels on the figure is missing “1- ” following “Acceptable Type I Decision Error Rate.” R. Meck provided a copy of the figure showing the proposed correction. K. Klawiter will correct the FAQ on the website.

MARSSIM TRAINING

Tetrattech NUS has been awarded a contract to perform training for EPA. There was a MARSSIM training course held at Rutgers University in January 2004, and Tetrattech NUS had several people attend the training to observe the current instructors. A training course is scheduled for March 15, 16, and 17 in Las Vegas as a transition course. A new instructor will perform approximately half of the training while the previous instructor observes and evaluates the course. The current instructor will provide the other half of the training while the new instructor observes the course.

The training schedule for the next 18 months has been established.

Fiscal Year ‘04

March 15, 16, 17, 2004

Las Vegas, NV

September 21, 22, 23, 2004

Cincinnati, OH

Fiscal Year ‘05

November 16, 17, 18, 2004

TBD, EPA Regional HQ

January 11, 12, 13, 2005

TBD, EPA Regional HQ

April 5, 6, 7, 2005

TBD, EPA Regional HQ

September 20, 21, 22, 2005

TBD, EPA Regional HQ

ADJOURN

Meeting Date: February 19, 2004
Date Prepared: February 23, 2004

**MULTI-AGENCY RADIATION SURVEY AND SITE INVESTIGATION MANUAL
(MARSSIM) WORKGROUP MEETING NOTES**

THURSDAY, FEBRUARY 19, 2004

ATTENDEES:

U.S. Environmental Protection Agency - OSWER/ERT-West: C. Petullo
U.S. Environmental Protection Agency - Headquarters: L. Bender
U.S. Environmental Protection Agency - NAREL: V. Lloyd
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MEMBERS OF THE PUBLIC:

Cabrera Services, Inc.: S. Hay (U.S. Air Force Contractor)

DISCUSSION

R. Bhat notified the WG that NCRP has posted a draft document for comment on the NCRP website <http://www.ncrp.com/review.html>. The draft document is SC 87-5 *Risk Management in Decommissioning of Radioactively Contaminated Sites*. Comments are due by February 27, 2004. R. Bhat stated that the NCRP is usually willing to accept comments after the comment date. A. Huffert informed the WG that NRC was preparing agency comments on the NCRP document.

The WG discussed a standardized convention for naming files. The file naming format is an identifier (e.g., Chapter number), a revision number, and a date (YYMMDD). For example, revision 5b of Chapter 2 would have the filename CH2_5b_040213.PDF.

NRC ISSUES IMPACTING MARSAME GUIDANCE

J Diccico briefed the WG on issues NRC had identified related to implementing a rule on disposition of materials and equipment. A handout was provided to WG members describing issues still to be resolved by NRC. Many issues are the same as those being discussed by the WG for the development of MARSAME. The objective of the briefing was to ensure the WG was aware of NRC developments, promote parallel construction of MARSAME and NRC implementation guidance, and minimize duplication of effort.

A major issue for NRC concerns the definition of surficial vs. volumetric residual radioactivity. R. Meck recommended that this issue has never been resolved adequately because there is a gray area where residual radioactivity could be described as surficial or volumetric. MARSAME should admit that there is uncertainty associated with the definition and provide guidance on how to deal with the uncertainty. Another approach MARSAME could adopt is similar to MARSSIM, where the definition is linked to the modeling assumptions (which are outside the scope of MARSAME). MARSAME only needs to state that the assumptions need to be verified and technically defensible. The survey techniques would also need to match these assumptions. NUREG-1640 calculated annual dose normalized to activity per gram. The annual doses normalized to surface area were derived from the mass-based calculations by multiplying them by a mass-to-surface area ratio. Surficial radioactivity was not technically defined in NUREG-1640, and thus the modeling assumptions would not provide guidance for the implementation of MARSAME. A third approach could be based on NRC guidance. A. Huffert provided a handout describing background information on the surficial vs. volumetric issue.

A second major issues involves the release of new DOT regulations on January 26, 2004. The new regulations provide isotope-specific limits for shipping radioactive materials and defining surface contaminated objects (SCOs). Although the new numbers seem low compared to Reg Guide 1.86, they are used to determine if the material needs to be over packed prior to shipment to protect people handling the materials during transport and are not used to release materials to the public.

The timeline for the NRC implementation guidance is to provide a draft for internal NRC review sometime in July. A final document is expected approximately one year later.

INTERDICTION DISCUSSION

The WG followed up on the discussion concerning interdiction from the previous day. MARSAME needs to state that Scenario A or Scenario B can be applied to either release or interdiction surveys. That is, the scenario for designing the disposition survey is not dependent on the type of survey. The discussion is too technical for Chapter 1, but needs to be introduced and referenced to the section where it will be discussed in detail, probably in Chapter 5. The guidance needs to address when to use each of the two scenarios.

Scenario A places the burden of proof on the site owner or M&E owner, which is why Scenario A appears in MARSSIM. Scenario B puts the burden of proof on the regulator.

Many interdiction surveys are designed for situations where the measurement equipment is operating at its limits (i.e., indistinguishable from instrument background, MDC decisions). The goal of an interdiction survey is often to optimize the detection of radioactivity that should be controlled while minimizing the disruption of general commerce and not interfere with normal work practices. Many instruments are set to alarm at some multiple of background which is selected based on an acceptable rate of false alarms (which is usually low). C. Gogolak stated it is possible to develop a decision error rate based on the acceptable number of false alarms. This has not been done and represents a major project. If an interdiction survey is designed to detect anything above background, it forces the use of Scenario B. This does not have to be the only type of interdiction survey. The selection of Scenario A or Scenario B should be primarily based on the action level.

CHAPTER 2 COMMENTS

Numerous comments on Chapter 2 were discussed by the WG. Similar to the discussion on Chapter 1, only the major discussion topics are reflected in the meeting minutes.

Chapter 2 needs to emphasize the graded approach. Some surveys require virtually no IA, while others require an extensive IA. D. Caputo suggested narrowing the scope of MARSAME to only include impacted materials and equipment. The WG decided to continue development of the supplement with the impacted or non-impacted decision being made as part of the IA. The quality and quantity of data needed to support a non-impacted decision varies, but needs to be documented. This chapter should use the DQO Process to define the level of information to support a finding of non-impacted. However, too formal an application of the DQO Process could make this step appear to be too complicated.

This chapter needs to incorporate the idea that some materials and equipment will include scoping, characterization, or remedial action support surveys as part of the IA. An example would be useful (e.g., gross beta-gamma data is available but action levels are nuclide specific). The goal of the IA is to provide sufficient information to make an informed, technically defensible decision selecting the preferred disposition option(s) for impacted materials and equipment. An early decision in this selection process is whether or not the materials and equipment are impacted.

LUNCH

CHAPTER 2 COMMENTS (Cont.)

Chapter 2 needs to do a better job stating what information is expected to be available during the IA. The September 2003 WG meeting minutes list process knowledge, sentinel measurements, smears, and inventory models as sources of IA information. The idea that sentinel measurements alone can determine something is impacted, but more than sentinel measurement data is required to determine something is non-impacted, needs to be emphasized.

The concept of uniformity needs to be split into two separate areas. First, there can be several small areas of elevated activity that all have the same nuclide concentrations (e.g., uranium ore dust collection in specific locations). Second, a constant level of activity can be distributed throughout the materials and equipment. Uniformity needs to be linked to the survey DQOs.

The discussion of the impacted/non-impacted decision needs to appear earlier in the chapter. DQOs should be developed and discussed for this decision.

A list of locations where interdiction surveys may be performed should be included (e.g., gates, entrances, tunnels, bridges, truck stops).

APPENDIX B COMMENTS

Natural background sources or areas of elevated natural background are complicating factors that affect Scenario B survey designs. The purpose of Appendix B is to provide some information on this topic to assist the user in determining ways to account for the complications in their survey design. The idea is to get past this point and develop a relative shift and continue with the survey design. The definition of background may be different for release and interdiction surveys. Background needs to be defined for specific purposes. The title of this Appendix will be changed to Sources of Background Radioactivity.

SADA WORKSHOP AND CONFERENCE

G. Powers informed the WG that there would be SADA Workshop and Conference in May at the NRC in Rockville, MD. The purpose is to announce the release of SADA version 4.0. A three day training course will be included as part of the Workshop and Conference.

Security issues may limit the training and workshop sections to U.S. citizens or Federal employees. If this happens, the conference may be delayed until October when it could be scheduled in a Washington, DC area hotel.

ADJOURN

Meeting Date: February 20, 2004
Date Prepared: February 24, 2004

**MULTI-AGENCY RADIATION SURVEY AND SITE INVESTIGATION MANUAL
(MARSSIM) WORKGROUP MEETING NOTES**

FRIDAY, FEBRUARY 20, 2004

ATTENDEES:

U.S. Environmental Protection Agency - OSWER/ERT-West: C. Petullo
U.S. Environmental Protection Agency - Headquarters: K. Klawiter
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U.S. Navy: S. Doremus
U.S. Department of Energy (DOE/EM): A. Williams
U.S. Department of Homeland Security (formerly DOE/EML): C. Gogolak

MEMBERS OF THE PUBLIC:

Cabrera Services, Inc.: S. Hay (U.S. Air Force Contractor)

DISCUSSION OF CASE STUDY EXAMPLES

The WG discussed the development of case studies to include in MARSAME. The group divided into individual agencies to discuss the 13 scenarios developed by A. Williams after the September 2003 WG meeting. The objective was to determine the scenarios that need to be covered by the case studies in MARSAME.

There were 4 scenarios selected for further development. Scenarios 1 and 7 were combined to describe a mineral facility that includes volumetric residual radioactivity as an issue. Scenario 2 (power plant) was expanded to include examples of activated materials and equipment. Scenario 3 (research lab) was modified to include some ideas from Scenario 5 (hospital), primarily the idea that trash needs to be surveyed to ensure small sealed sources are not inadvertently

discarded. The fourth case study will describe a Scenario B interdiction problem that has not been described in detail, and was not included in the original 13 scenarios.

The WG also created a matrix of issues that could be encountered when applying MARSAME guidance. Examples will be developed from the four scenarios to describe as many of the combinations from the matrix as possible. The matrix is summarized in Table 1.

Table 1

Parameter	Variables
Facility Type	civilian, government, both
Regulatory Control State	high to medium, high to low, medium to low (low=uncontrolled)
Radiation Type	high LET, Low LET, mixed
Distribution	surficial, volumetric, mixed
Process Knowledge	high, low
Survey Type	release, operational, decommissioning, interdiction
Surface	accessible, difficult to access

LUNCH

CHAPTER 3 DISCUSSION

The objective of Chapter 3 is to select an action level and determine the data that will be compared to the action level. The discussion of action levels should discuss waste acceptance criteria at disposal sites and problems with accessibility.

Information required to select an action level include the expected distribution of the residual radioactivity (surficial or volumetric), radionuclides of potential concern, and physical properties of the materials and equipment (soil, metal, tools, liquid, dry active waste, etc.).

G. Powers suggested that Chapter 3 may be structured to develop a classification system, rather than trying to fit materials and equipment into the MARSSIM classification system. Each type of material and equipment could generate an independent system of classification. The WG decided that this type of guidance would be difficult to develop and difficult to regulate.

The WG identified four pieces of information required to support demonstrating compliance with an action level (the primary question for MARSAME). These are 1) selecting an action level, 2) survey unit identification, 3) classification, and 4) selecting a measurement method (i.e.,

instrument selection). Each of these decisions provides information required to design a disposition survey.

The Work Group identified a list of topics that need to be discussed in Chapter 3.

Selection of disposition options (from Chapter 2)
Radionuclides of potential concern
Activity/concentration (from process knowledge or preliminary surveys)
Decay chains/equilibrium status
Surrogate measurements
Homogeneous or heterogeneous distribution (uniformity)
Surficial or volumetric
Physical properties of the materials and equipment
Background (complications and identification of reference materials)

CHAPTER 4 DISCUSSION

The WG provided ideas on the development of Chapter 4. Referring to the EPA QA/G-4 document, the expected outputs from Step 4 of the DQO Process are:

Identify the target population to be measured
Spatial boundaries that clarify what the data must represent
Time frame for collecting data and making the decision
Practical constraints on collecting data
Determine the smallest subpopulation, area, volume or time, for which separate decisions must be made

A matrix was developed using the four information sources from Chapter 3 and the outputs of Step 4 in the DQO Process. The idea was to provide a structure for Chapter 4 of the types of discussions that may provide information useful to the MARSAME user. The Matrix is summarized in Table 2.

Table 2

	Action Level	Survey Unit	Classification	Method
Population	X	X		X
Spatial Boundaries	X	X	X	X
Time Frame				X
Constraints	X	X		X
Subpopulation	X	X		X

375 All of the outputs from Step 4 of the DQO Process will need to be discussed to some extent in
376 the guidance provided in Chapter 4. This information will be used to design the disposition
377 survey to answer the primary study question for MARSAME, which is whether or not the
378 materials and equipment demonstrate compliance with the action level for the selected
379 disposition option.

380 The contractor was directed to provide a draft of Chapter 3 and a strawman for Chapter 4.

381 AGENDA FOR MARCH WG MEETING

382	Monday	Administrative issues, FAQ on % scan coverage to release, surface vs. volumetric
383	Tuesday	Chapter 3
384	Wednesday	Chapter 4
385	Thursday	Chapter 6, Case Study Examples
386	Friday	Development of Chapter 5, closeout

387 ADJOURN

ACTION ITEMS

388

389	All	Review February meeting draft minutes, Chapter 3, Chapter 4, Chapter 6, and
390		possibly Case Study Examples.
391		Provide electronic comments on EML website by March 19, 2004.
392		Get name of Agency contact for EPA RCRA C landfill disposal advanced notice
393		of proposed rule making (ANPRM).
394	J. DeCicco	Provide update on NRC guidance development at May WG meeting.
395	C. Gogolak	Complete FAQ on per cent scan for release by March 22, 2004.
396	K. Klawiter	Correct FAQ on the website with information provided by R. Meck.
397		Determine if documents listed in Comment 65 on Appendix B are publically
398		available, report to WG at March meeting.
399		Post new MARSSIM logo on website.
400		Develop and post an announcement welcoming DHS to the WG.
401	N. Azzam	Continue looking for references for concentrations of naturally-occurring
402		radionuclides present in ceramics.
403	S. Doremus	Get information on DOD involvement in the MARSAME approval process,
404		identify person with authority to sign the supplement.
405	D. Caputo	Get information on DOD involvement in the MARSAME approval process,
406		identify person with authority to sign the supplement.
407	C. Petullo	Follow up with A. Wallo about ISCORS review of MARSAME, notify WG
408		members if MARSAME is on agenda for an ISCORS meeting.
409	S. Hay	Provide February meeting draft minutes to EML to post for review by February
410		27, 2004.
411		Develop revised Chapter 3 and strawman for revised Chapter 4 and provide to
412		EML to post for review by March 8, 2004
413		Develop revised Chapter 6 for March WG meeting.
414		Report progress on Case Study Examples to C. Petullo by March 12, 2004.
415	Parking Lot	Class 3 definition in MARSSIM may need adjustment to cover the “simple” case
416		where the relative shift is very large, which may become the definition of Class 3.